REMARKS

In the Official Action, the Examiner rejected claims 1-3, 5-18, 20-22, 24-41 and 43-48. By the present Response, Applicants amended claims 1-3, 5, 8, 15, 20, 21, 25, 36, 39, and 45, cancelled claims 18, 26, 37, and 38, and added new claims 49-51 to clarify features of the present techniques and to correct drafting errors. Support for the amendments can be found in the specification on pages 14-18, paragraphs 37-44 and 46, pages 21-22, paragraphs 56-57, and in Figs 1-3. No new matter has been added. Upon entry of the amendments, claims 1-3, 5-17, 20-22, 24, 25, 27-36, 39-41 and 43-51 will be pending in the present application. Applicants respectfully request reconsideration of the pending claims in view of the foregoing amendments and the following remarks.

Rejections Under 35 U.S.C. § 112, First Paragraph

The Examiner rejected claims 47 and 48 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Office Action, pages 2-3. However, this rejection is moot in light of the amendments made to claims 47 and 48. Accordingly, Applicants respectfully request withdrawal of the present rejection of claims 47 and 48 under 35 U.S.C. §112, first paragraph.

Rejections Under 35 U.S.C. § 112, Second Paragraph

The Examiner rejected claims 3, 6-8, 16, 18, 20-22, 26-28 and 37-41 under 35 U.S.C. § 112, second paragraph. In particular, the Examiner asserted that claims 3 and 16 were indefinite because of insufficient antecedent basis for "the extrusion zone" recited in claims 3 and 16.

Office Action, page 3. Further, the Examiners contended that 6-8, 18, 20-22, 26-28 and 37-41 were indefinite because "[c]laims 1, 15, 25 and 36 each positively recite that there is no fractionating from the recycle zone and yet claims 6-8, 18, 20-22, 26-28 and 37-42 then recite that there is a fractionating zone from the recycle zone." Office Action, page 3. While Applicants do not necessarily agree with the contentions made by the Examiner, the amendments to claims 1, 3, 15, 25, and 36 are believed to render moot the rejections under 35 U.S.C. § 112, second paragraph. Accordingly, Applicants respectfully request withdrawal of the present rejection of claims 3, 6-8, 16, 18, 20-22, 26-28 and 37-41 under 35 U.S.C. § 112, second paragraph.

Rejections Under 35 U.S.C. § 102

The Examiner rejected claim 46 under 35 U.S.C. 102(b) as being anticipated by Hanson (5,597,892). Applicants respectfully traverse this rejection. Specifically, the Examiner stated:

> Hanson discloses a method comprising:
> processing effluent (22) of a polymerization reactor (10) by separating the liquid from the solids in the effluent by flashing (via 28) to generate hydrocarbon vapor (30);
> transporting and condensing the vapor (via 38) to form a recovered liquid (in tank 42); and
> recycling at least a portion of the recovered liquid (via 16) to the polymerization reactor (10) without fractionating the liquid (see figure 1).

Office Action, page 4.

Legal Precedent

Anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). In order to maintain a proper rejection under section 102, a single reference must teach each and every element or step of the rejected claim, else the reference falls under section 103. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, the Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the *identical* invention "*in as complete detail as contained in the ... claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Independent Claim 46 – Deficiencies of Hanson

Independent claim 46, as amended, recites "transporting an equilibrium *vapor* of the recovered hydrocarbon liquid to a *fractionation system*." Conversely, the Hanson reference merely discloses that "any uncondensed vapor and gases can be removed overhead from the [recovered diluent] accumulator 42." *See* col. 3, lines 2-9; Fig. 1. Clearly, the Hanson vapor is *not* transported to a fractionation system. *See* col. 3, lines 2-27; Fig. 1. After all, the cited reference does *not* disclose a fractionation system, much less a fractionation system for processing an equilibrium vapor of the recovered liquid diluent. *See id.* The Hanson system is absolutely devoid of a

fractionation system. *See id.* (disclosing direct recycle of recovered liquid diluent to the Hanson reactor). Therefore, independent claim 46 and the claims dependent thereon are believed to be allowable over the Hanson reference. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 46 and allow the claim.

Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 1, 2, 5, 9-15, 17, 24, 25, 29-36 and 43 under 35 U.S.C. 103(a) as being unpatentable over Hanson (5,597,892) in view of Howard et al. (5,533,437). In addition, the Examiner rejected claims 44 and 45 under 35 U.S.C. 103(a) as being unpatentable over Hanson in view of Howard et al., as applied to claims 1 and 15, and further in view of Perry (3,869,807). Of these claims, claims 1, 15, 25, and 36 are independent. Applicants respectfully traverse these rejections. Specifically, the Examiner stated:

> With respect to claims 1, 15, 25 and 36, Hanson discloses a method and apparatus comprising:
>
> processing slurry (22) of a polymerization reactor (10) by separating the liquid from the solids in the effluent by flashing (via 28) to generate hydrocarbon vapor (30);
>
> transporting and condensing the vapor (via 38) to form a recovered liquid (in tank 42); and
>
> recycling at least a portion of the recovered liquid (via 16) to the polymerization reactor 10) without fractionating the liquid (see figure 1).
>
> Hanson fails to disclose wherein the solid particles from the intermediate (flash) zone are sent to a purge zone.
>
> Howard et al. discloses a polymerization process and apparatus and teaches wherein it is valuable to purge the particles

from a polymerization reaction and recover separated hydrocarbons from a purge zone to recycle to the polymerization reactor as well as recycle separated purge gas to be reused in the purge zone (col. 4, lines 52-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Howard et al. to send the particles of Hanson to a purge zone to stop the polymerization reaction and recycle the streams from a purge zone in order to make use of those products as well as achieve an efficient system.

With respect to claim 2, Howard et al.'s teaching of recycling the purge gas back to the purge zone (col. 4, lines 52-57) would read on passing the recovered stream to a closed loop transfer zone.

With respect to claims 5 and 17, Howard et al. teaches wherein recovered hydrocarbon is recycled to the reaction zone (col. 4, lines 52-57).

With respect to claims 10-13 and 30-33 Howard et al. discloses wherein the recovered purge stream is "high purity purge gas" (col. 4, lines 54-58).

With respect to claims 14 and 34, Howard et al. discloses wherein the purge stream is nitrogen and the hydrocarbon comprises diluent (col. 4, lines 43-52).

With respect to claims 9, 24, 29 and 43, Howard et al. does not teach wherein the recovery unit is connected to a purge gas flare.

With respect to claim 35, Howard et al. discloses wherein the purge stream can comprise particles and therefor would act as a motive force (col. 4, lines 43-53).

*****

The modified apparatus of Hanson discloses all of the process and structure as discussed above, but fails to disclose an extrusion feed zone.

> Perry also discloses a transfer means for the solids of a polymerization process (col. 1, lines 10-17). The process of Perry also teaches a flash tank (7) followed by a purge zone (4) and further teaches an extruder in a sealed (col. 3, lines 5-15) connection to the purge zone (4) (see figure) so that both solids and gases would transfer to the extruder. It would have been obvious to one of ordinary skill in the art at the time the invention was made to further provide an extruder to the modified Hanson et al. in order to make use of the products of the system.

Office Action, page 4-6.

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination or modification. *See ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

Independent Claims 1, 15, 25, and 36 – Deficiencies of the Cited Combinations

Independent claim 1, as amended, recites "passing at least a first portion of the *recovered hydrocarbon* fluid stream from the recovery zone to a *fractionation* zone." In contrast, neither reference cited by the Examiner discloses a fractionation zone. Instead, the Hanson reference

discloses that the recycled diluent is merely returned to the reactor without fractionating the diluent. *See* Hanson, col. 3, lines 2-27; Fig. 1. In particular, the diluent separated from the effluent of the Hanson polymerization reactor 10 via the cyclone flash vessel 28 is condensed and pumped "back to the polymerization reactor 10 via conduit 16." *See* Hanson, col. 3, lines 2-9; Fig.1. Further, vapors from the downstream low-pressure flash vessel 50 are compressed, condensed, and "recycled through conduit 62 to conduit 16 and then to the polymerization reactor 10." *See* Hanson, col. 3, lines 18-27; Fig. 1. Hanson does not disclose a fractionation system. *See, generally*, col. 3, lines 2-27; col. 4, lines 40-57; Figs. 1-2. As for the secondary reference, Howard discloses that unreacted gas is recycled to the reactor *without fractionation*. *See* Howard, col. 5, lines 17-31; Fig. 1. Therefore, independent claim 1 and the claims dependent thereon are believed to patentable over the Hanson and Howard references, whether taken alone or in combination.

Independent claim 15, as amended, recites "a *vapor* delivery conduit coupled to a top portion of the recycle tank and fluidically connected to a first *fractionation* column." Similarly, independent claim 25, as amended, recites "transferring *vapor* from the recycle zone to a *fractionation* zone." Lastly, independent claim 36, as amended, recites "a *vapor* delivery conduit fluidically connecting a top portion of the recycle tank with a first *fractionation* column." In contrast, as discussed, the Hanson reference does *not* disclose a fractionation system, much less a fractionation system for processing a *vapor* of the recycled liquid diluent. *See* Hanson, col. 3, lines 2-27; Fig. 1. Instead, the Hanson *vapor* of the condensed liquid diluent remains in the accumulator 42 or is simply vented from the accumulator 42. *See id.* Applicants stress that even the recycled liquid diluent, including that flowing through the accumulator 42, is not subject to fractionation.

See Hanson, col. 3, lines 2-27 and Fig.1 (disclosing direct recycle and failing to disclose a fractionation system). Moreover, the secondary reference, Howard, discloses neither recycling of a hydrocarbon vapor or fractionation of such a vapor. Instead, Hanson discloses that unreacted gas (not vapor) is recycled to the reactor. *See* Howard, col. 5, lines 17-31; Fig. 1. Further, this unreacted gas in Hanson recycled *without fractionation*. *See id.* Therefore, independent claims 1, 15, 25, and 36, and the claims dependent thereon, are believed to patentable over the Hanson and Howard references, whether taken alone or in combination.

Accordingly, the two cited references, taken alone or in combination, fail to teach, suggest, or disclose *all* of the features of the independent claims. Moreover, there is no suggestion or motivation to modify or combine the cited references in the manner asserted by the Examiner or in the manner recited in the claims. Therefore, the independent claims 1, 15, 25, and 36, and their dependent claims, are believed to be patentable over the cited combination of Hanson and Howard. Accordingly, Applicant respectfully requests withdrawal of the Examiner's rejections and allowance of the foregoing claims.

Dependent Claims

In rejecting the various dependent claims, the Examiner's combination of the Hanson and Howard references and the Examiner's combination of the Hanson, Howard, and Perry references do not obviate the deficiencies of the Hanson and Howard references discussed above with regard to the independent claims 1, 15, 25, 36, and 46. Therefore all of the dependent claims are believed to be patentable for the subject matter they separately recite as well as by virtue of their dependency

on their respective allowable base claims. Accordingly, Applicant respectfully requests withdrawal of the Examiner's rejections and allowance of the claims.

New Claims

Applicants have added new claims 49-51. Applicants respectfully submit that new claims 49-51 are in condition for allowance.

Conclusion

In view of the remarks and amendments set forth above, Applicant respectfully requests allowance of claims 1-3, 5-17, 20-22, 24, 25, 27-36, 39-41 and 43-51. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: July 20, 2005

Michael G. Fletcher
Reg. No. 32,777
FLETCHER YODER
P.O. Box 692289
Houston, TX 77269-2289
(281) 970-4545